

AMENDMENTS TO THE SPECIFICATION

[0003] PIN photoconversion structure 120 includes a p-type anode layer 129, an intrinsic (undoped) absorption layer 125, an n-type cathode layer 121, and an etch stop layer 121-E. Absorption layer 125 absorbs light (photons) from an optical signal 190 that passes through anode layer 129. If the absorbed photons have sufficient energy (shorter wavelengths correspond to higher energy photons), electron-hole pairs are generated within absorption layer 125. The free electrons and holes move in opposite directions (electrons towards n-type cathode layer and holes towards p-type anode layer 129 121), thereby generating an electrical signal that can be correlated to optical signal 190.

[0010] For example, if vertical length L1 is 1.4 μm , photodetector 100 will absorb ~~absorb~~ absorb roughly 61% of incoming optical signal 190. However, to support a 40 Gb/s transmission rate, absorption layer 125 in conventional photodetector 100 must be reduced to a vertical length L1 of 7000Å. At this vertical length (thickness), absorption layer 125 will only absorb about 38% of incident optical signal 190. Consequently, conventional high-speed PIN photodetectors have difficulty detecting low-level optical signals.